Claims

1. (previously presented) A method for detecting a bioactive compound or organism, comprising:

providing at least one bead comprising chromatophores in a first optical state;

commingling the bioactive compound or organism with the chromatophores; and

detecting an optical change in at least one chromatophore from the first optical state to a second optical state in response to the bioactive compound or organism.

Claim 2 (canceled).

3. (previously presented) The method of claim 1, wherein the chromatophores are fish chromatophores and an optical change in the at least one chromatophore is selected from a group consisting of pigment aggregation, pigment dispersion, and hue changes.

4. (original) The method of claim 1, wherein the bioactive compound is selected from a group consisting of neurotransmitters, adrenergic agonists, adrenergic antagonists, seratonergic antagonists, hormones, cytoskeletal inhibitors, cAMP Signal transduction modulators, calcium ion signal transduction modulators, membrane voltage regulators, neurotoxins, protein kinase modulators, caustic irritants, heavy metals, polyaromatic hydrocarbons, organo phosphate nerve agents, psychogenic agents, antihistamines, enzyme inhibitors, algal toxins, bacteria, and bacterial protein toxins.

5. (previously presented) The method of claim 1, wherein the organism includes a bacteria, fungus, virus, plant, or animal.

6. (previously presented) The method of claim 1, wherein the chromatophores are Betta chromatophores.

7. (previously presented) The method according to claim 1, comprising:

exposing a first type of chromatophore to a sample potentially comprising a bioactive compound or organism;

exposing a second type of chromatophore to a sample potentially comprising a bioactive compound or organism; and

identifying at least one class of compounds by comparing an optical appearance of the first type of chromatophore and the second type of chromatophore prior to exposure to the bioactive compound or organism and after exposure to the bioactive compound.

8. (original) The method of claim 7, wherein the first and second types of chromatophore are melanophores and erythrophores, respectively.

9. (original) The method of claim 8, wherein the chromatophores are fish chromatophores.

10. (previously presented) The method of claim 1 useful for identifying a calcium channel blocker, comprising:

exposing an erythrophore chromatophore and a melanophore chromatophore to a known calcium channel blocker, thereby producing a known response to the calcium channel blocker;

exposing the erythrophore chromatophore to a sample potentially comprising a calcium channel blocker;

exposing the melanophore chromatophore to the sample; and

determining that the sample includes a calcium channel blocker based on an erythrophore dispersion response and no melanophore response.

11. (previously presented) The method of claim 1 where the chromatophores have a first color prior to commingling the bioactive compound or organism with the chromatophores and a second color after commingling the bioactive compound or organism with the chromatophores, the method further comprising detecting a color change from the first color to the second color of at least one chromatophore.

Claim 12 (canceled).

13. (previously presented) The method of claim 11, further comprising determining if a test sample includes a compound selected from a group consisting of neurotransmitters, hormones, intracellular signal transduction agents, pharmaceutically active agents, toxic agents, agricultural chemicals, chemical toxins, biological toxins, microbes, and animal cells based on the color change.

Claims 14-24 (canceled).

25. (previously presented) The method of claim 1 further comprising:

selecting a bacteria that produces a bacterial-induced response on the at least one chromatophore;

exposing a combination of the at least one chromatophore and the bacteria to the bioactive compound;

exposing the combination to a control compound selected based on a control response produced on the chromatophore;

determining a measured response of the chromatophore to the exposure of the combination to the control compound; and

evaluating the bioactive compound based on a difference in the measured response, the bacterial-induced response, and the control response.

Claim 26 (canceled).

27. (previously presented) The method of claim 25, wherein the control compound is norepinephrine.

Claims 28-30 (canceled).

31. (previously presented) The method according to claim 1 where the at least one bead is formed from glass or polymeric material.

32. (previously presented) The method according to claim 31 where the polymeric material is alginate.

33. (currently amended) A method for detecting a bioactive compound or organism, comprising:

providing at least one bead comprising Betta chromatophores in a first optical state;

exposing the Betta chromatophores in ~~a~~ the first optical state to the bioactive compound or organism; and

detecting an optical change in at least one Betta chromatophore from the first optical state to a second optical state in response to the bioactive compound or organism.

34. (previously presented) The method according to claim 33 where exposing comprises exposing two or more classes of Betta splendens chromatophores to the bioactive compound or organism.

35. (previously presented) The method according to claim 34 where the Betta splendens chromatophores are isolated chromatophores.

36. (previously presented) The method according to claim 33 and further comprising exposing the bioactive compound or organism to chromatophores in addition to the Betta chromatophores.

37. (currently amended) A method for detecting a bioactive compound or organism, comprising:

providing at least one bead comprising isolated chromatophores;

exposing the isolated chromatophores to a bioactive compound or organism; and

quantifying a scalar optical change in at least one chromatophore in response to the bioactive compound.

38. (previously presented) A method for detecting a bioactive compound or organism, comprising:

providing beads comprising two or more types of isolated, primary Betta splendens chromatophores;

commingling the bioactive compound or organism with the chromatophores; and

detecting a scalar optical change in at least one chromatophore in response to the bioactive compound or organism.

39. (previously presented) The method according to claim 38 where detecting the scalar optical change comprises computer aided detection.